



Clinical Practice

A prospective study of injuries inflicted on children by children

Jonathan P. Wyatt MFFLM (Consultant in Emergency Medicine)*, Sarah Woodhams MSc (Research Nurse), Laurence Weinberg MB ChB (Senior House Officer in Emergency Medicine), David Alao FCEM (Registrar in Emergency Medicine), Louisa Mitchell MCEM (Registrar in Emergency Medicine)

Accident and Emergency Department, Royal Cornwall Hospital, Treliske, Truro, Cornwall TR1 3LJ, United Kingdom

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ABSTRACT

Intentional injuries inflicted upon children by adults rightly cause great concern and have been studied extensively. In contrast, little is known about the pattern, nature and extent of injuries sustained by children inflicted by other children. A funded prospective study of injured children was undertaken over 18 months. Children's injuries were studied in an epidemiologically complete population comprising the western two-thirds of Cornwall. Information was collected from ten hospitals in standardised fashion using the widely accepted Children's Hospital Injury Reporting and Prevention Programme (CHIRPP). 597 injuries (67% involving boys) were identified as having been inflicted apparently deliberately by other children. 62% of injuries affected children aged under 12 years. 245 injuries (41%) occurred at or around school, 143 (24%) at home. Most injuries involved soft tissues, but there were 116 fractures, which accounted for 22 of the 40 hospital admissions. Interestingly, despite a description of an "assault", only 38% of injuries were initially coded as intentional by treating hospital staff. These results reveal the previously largely unrecognised scale of the problem of interpersonal violence between children. It is not surprising that most injuries occurred in or around school, given that this is where children interact with other children. The attitude of healthcare professionals may need to change if this problem is to be properly addressed.

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1. Introduction

Morbidity and mortality resulting from injury remain a considerable concern. Despite dramatic advances in other areas of clinical medicine, there is a feeling among some experts that injury prevention is poorly targeted, inadequately funded and seldom evaluated.¹ One area of injury which has been studied extensively and which is rightly a source of concern relates to intentional injuries inflicted upon children. Most of the research in this area investigates injuries inflicted by adults upon children. In contrast, relatively little is known about the pattern, extent and nature of injuries sustained by children which have been inflicted during deliberate acts of aggression by other children. This study aims to address this.

2. Methods

This prospective research study was funded by a grant from the Research and Development Directorate and ethical approval was obtained from the relevant local ethics committee. Children aged less than 16 years presenting with injuries and/or poisonings to an Accident and Emergency department or to a minor injury unit

in the western two-thirds of the county of Cornwall (resident population of 350,000, albeit with significant additional numbers of summer visitors) were studied. Children presenting to minor injury units in towns in the eastern third of Cornwall were excluded from analysis, since children requiring Accident and Emergency or further hospital treatment from these towns receive treatment from hospitals in a neighbouring county.

Data were collected using the Canadian Hospitals Reporting and Prevention Program (CHIRPP). This system is reasonably established and has previously been used to study injuries in urban populations of children in Canada and Scotland.^{2–4} Previous research has demonstrated that the majority of parents do not feel threatened by such data collection and agree that it is worthwhile to gather information with the aim of preventing injuries.⁵ Data relating to children with injuries presenting to hospital were collected prospectively over an 18 month period. This data collection took the form of handwritten answers to questions on a double sided A4 sheet of paper for each patient.⁴ The child and/or the accompanying parent/guardian was asked to provide simple details of how the injury occurred by answering simple questions using free text. The nurse or doctor treating the child completed details of injuries sustained (including the site(s), type and extent of injury) and the treatment provided. The treating nurse or doctor was also responsible for coding each injury according to apparent

* Corresponding author. Tel.: +44 01872 25 3229; fax: +44 01872 25 2402.

E-mail address: jonathan.wyatt@rcht.cornwall.nhs.uk (J.P. Wyatt).

intent. A part-time research nurse was principally responsible for co-ordinating the collection of data and for entering it onto a standardised database.

3. Results

During the study period of 18 months, data were collected on 12,758 separate episodes of injury and/or poisoning to children in Cornwall. 226 injuries were coded by the nurses and/or doctors seeing and treating the children as “assaults” on children by other children. However, when the data were viewed and entered onto the database by the research team, it was apparent from the free text information that an additional 371 injuries actually appeared to be injuries inflicted during deliberate acts of aggression by children on other children, but were apparently incorrectly coded by the doctors and/or nurses. This gave a total number of identified intentional episodes of interpersonal violence among children of 597 (4.7% of the total database). Children who presented with injuries which appeared to be self-inflicted, inflicted by adults or were of unknown intent were excluded from this analysis. These 597 injuries affected 398 boys (67%) and 199 girls (33%). The overwhelming majority of those injured were locals with postcodes in Cornwall (558 children, 93%), rather than tourists with postcodes elsewhere (39 children, 7%).

Data regarding ages were available for 98% of injured children. The numbers of children who were injured at various ages is shown in Table 1. Apart from recording how the children had been injured by another child, there was no reliable data recorded regarding the ages of the alleged perpetrators in the majority of cases. The distribution of locations where the interpersonal violence between children occurred is shown in Table 2. The most common recorded site of injury was at school, which accounted for 41%, with more injuries reported inside than outside. Most of the injuries were soft tissue injuries, but there were also 116 fractures, distributed among various parts of the body as summarised in Table 3. Forty children had injuries which caused them to be admitted to hospital – 22 of these injuries involved fractures. Most of the injuries which required admission but did not involve fractures (11/18) were head injuries.

4. Discussion

This project has identified a previously unrecognised problem and one which appears to be significant. The data presented indi-

Table 3

Fractures resulting from interpersonal child violence

Body region	Fracture	Number	% of total
Head/neck	Nose	14	12%
	Face	6	5%
	Skull/neck	2	2%
Upper limb	Hand	36	31%
	Wrist/forearm	31	26%
	Elbow	9	8%
	Shoulder/upper arm	5	4%
	Clavicle	4	3%
Lower limb	Tibia/fibula shafts	3	3%
	Ankle	3	3%
	Foot	3	3%
Total		118	

cate that injuries to children inflicted by other children are relatively common and affect children of all ages. Most of these injuries appear to be relatively minor in nature, but a significant proportion were more serious, requiring admission to hospital and/or involving fractures causing pain and immobilisation with reduced function in the short and medium term.

There is very little within the medical literature regarding interpersonal violence between children – much of what has been published has come from other parts of the world, with a focus upon serious injuries and deaths in older children and adolescents.^{6–10} One prospective study from the United States investigated the epidemiology of injuries to preschool children in care centres and found that 37% of injuries were precipitated by or had the involvement of another child.¹¹ Their data were gathered from teachers, who completed standardised forms when an event “that resulted in bodily harm, as reflected by a physical mark or a sustained complaint more than 5 min in duration” took place. Most of the injuries were minor, so would not have (otherwise) come to medical attention. As in our study, there was a preponderance of boys being injured.¹¹

There appears to be an interesting cultural approach to the issue of interpersonal violence involving children: injury to children caused by adults is generally acknowledged to be unacceptable (and to represent non-accidental injury), but there seems to be a reluctance to consider interpersonal injury between children in the same way. This is perhaps underlined by the fact that many of the nurses and doctors treating children who suffered injuries in this way coded them as “accidental” (unintentional) for the purposes of this study. It has to be acknowledged that the true intentions of the perpetrators responsible for injuries to children in this study were often not known – a young child who hits or pushes another may be incapable of predicting the consequences of this action in terms of the injury caused, and also incapable of understanding the effects of this injury on the injured person. Similar arguments and difficulties have permeated the legal approach to children who commit crime. Traditionally in English law, a child aged less than ten years is deemed incapable of committing a crime (Cape, 1999).¹²

The injuries recorded in this study involved children of all ages, demonstrating that it is not simply a problem of very young children incapable of complex reasoning. The finding that so many of the injuries occurred at schools is no real surprise, given that this is where children mix. The extent to which these injuries reflected persistent or systematic bullying remains unclear. However, attitudes and procedures appear to be changing, such that schools may now tend to take action when pupils sustain injuries whereas they would have previously not done so. One large Turkish survey of high school students reported that 22% of girls and 61% of boys participated in physical fighting in the previous six months.¹³ This study also reported a clustering of children with “problem behaviour” who engaged in fighting and were more likely to take part in other risk taking behaviour.

Table 1

Ages of children injured by other children

Age range	Number of children	% of total number
0–4 years	105	18%
5–11 years	266	45%
Over 12 years	211	35%
Not recorded	15	2%

Table 2

Locations of interpersonal violence between children

Location	Number of injuries	% of total
School inside (classroom, corridor etc)	181	30%
School outside (playground, entrance etc)	64	11%
Public place (road, beach, park etc)	174	29%
Home (inside or outside)	143	24%
Public sports ground (football, cricket pitch etc)	18	4%
Other (tent, caravan etc)	10	2%

From an injury prevention perspective, injuries sustained by children at the hands of other children do not appear to be easy to address. There remains a general acceptance that children need to experience confrontational play with siblings and other children as part of “growing up”, although there are different views about the limits and extent to which physical aggression should be tolerated.^{11,14} Given this background, preventing injuries occurring as a result of conflict between children is clearly quite a challenge. There is potential to prevent injuries in certain situations. For example, a recent study reported that illegal or foul play in high school team sport was responsible for a number of significant injuries (particularly to the head) – this could be addressed by enhanced enforcement of rules.¹⁵

5. Conclusions

We report a large number of injuries resulting from interpersonal injury between children. It is possible that our study may underestimate the problem, as for various reasons, parents may not report injuries occurring as a result of interpersonal violence between siblings. Interpersonal injury between children appears to be a phenomenon which has been previously largely ignored, but which deserves attention. The attitude by healthcare professionals towards this issue may need to change before it can be properly addressed.

Conflict of interest statement

No conflicts of interest.

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Ethical approval

The study was approved by the Cornwall Research Ethics Committee (ref 110.7.99).

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